

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* HAROLD DEE GARDINER and RUSSELL JOSEPH URRY

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Appeal 2009-001597  
Application 10/969,313  
Technology Center 2600

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Decided: October 22, 2009

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Before ROBERT E. NAPPI, JOHN A. JEFFERY, and THOMAS S. HAHN,  
*Administrative Patent Judges.*

NAPPI, *Administrative Patent Judge.*

DECISION ON APPEAL

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This is a decision on appeal under 35 U.S.C. § 134(a) of the rejection of claims 1 through 22.

We affirm.

### INVENTION

The invention is directed toward a method of generating volumetric obscuration in a computer generated graphical image, e.g. generating fog, smoke, or clouds in a computer generated image. See pages 2, 3 in Appellants' Specification. Claim 1 is reproduced below:

1. A method for rendering a volumetric obscuration in a computer generated graphical image, comprising the steps of: defining a polygon template as a volumetric obscuration comprising pixels and sub-pixels;  
spreading the sub-pixels in depth for pixels in the polygon template to create a thickness for the volumetric obscuration; and  
modulating a density of the sub-pixels to vary the distances between the sub-pixels for the volumetric obscuration to create a realistic image of a volumetric obscuration having a variable front surface, a variable rear surface, and a variable interior density.

### REFERENCE

Rick D. Bess & Brian T. Soderberg, "Battlefield Smoke – A New Dimension in Networked Simulation," BBN Sys. and Technologies Div., 256-261 (1991).

Venceslas Biri et al., "Real-Time Animation of Realistic Fog," Eurographics Workshop on Rendering, June 2002.

James D. Foley et al., "Second Edition in C Computer Graphics Principles and Practice," 642-646 (Addison-Wesley 1996).

## REJECTIONS AT ISSUE

The Examiner has rejected claims 1 through 22 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

The Examiner has rejected claims 1, 2, 5, 6, 9 through 17, and 19 through 22 under 35 U.S.C. § 103(a) as being unpatentable over Bess in view of Biri.

The Examiner has rejected claims 3, 4, 7, and 8 under 35 U.S.C. § 103(a) as being unpatentable over Bess in view of Biri and Foley.

## ISSUES

### Rejection under 35 U.S.C. § 101

Appellants argue on page 27 and 28 of the Appeal Brief<sup>1</sup> and pages 4 through 8 of the Reply Brief that the Examiner's rejection of claims 1 through 22 under 35 U.S.C. § 101 is in error. Appellants assert that the Examiner has misconstrued the claims as consisting solely of mathematical operations, and the claims recite converting a polygon into a volumetric obscurant. Brief 27. Appellants conclude that the claims set forth a practical application of the mathematical operations to create a realistic image of a volumetric obscurant. Brief 27, Reply Brief 5-8.

Thus, Appellants' contentions with respect to the rejection based upon 35 U.S.C. § 101 present us with the issue: have Appellants shown that the Examiner erred in determining that claims 1 through 22 are directed to non-

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statutory subject matter as they recite a mathematical operation without a practical application?

Rejection of claims 1 through 22 under 35 U.S.C. § 103(a)

As discussed *infra*, our decision concerning the rejection of claims 1 through 22 is dispositive of the appeal. Accordingly, we do not reach the issues raised with respect to the Examiner’s rejections of claims 1 through 22 under 35 U.S.C. § 103(a).

PRINCIPLES OF LAW

“[A]n applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article” into a different state or thing. *In re Bilski*, 545 F.3d 943, 961 (Fed. Cir. 2008) (en banc); *see also Gottschalk v. Benson*, 409 U.S. 63, 70 (1972). Further, while a claim may be drawn to a machine, within the meaning of 35 U.S.C. § 101, the analysis to determine patent-eligibility is not complete. *See In re Ferguson*, 558 F.3d 1359, 1363 (Fed. Cir. 2009); *see also Ex parte Gutta*, No. 2008-4366, 2009 WL 2563524 (BPAI 2009) (per curiam).

ANALYSIS

Rejection of claims 1 through 22 under 35 U.S.C. § 101

Appellants’ arguments have not persuaded us that the Examiner erred in determining that independent claims 1 and 20 are directed to non-statutory

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<sup>1</sup> Throughout the opinion we refer to the Brief dated September 5, 2007, and Reply Brief dated February 7, 2008.

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subject matter. Initially, we note that Appellants do not dispute the Examiner's finding that the claims recite a mathematical operation (an algorithm), but rather Appellants focus on whether the claims recite a practical application of the mathematical operation. Brief 28, Reply Brief 5-8. Nevertheless, the test for process claims is whether the claim is tied to a specific machine or that the claimed process transforms an article to a different state or thing. *Bilski*, 545 F.3d at 961.

Claims 1 and 20 do not recite that the mathematical operation is limited to a machine, let alone a particular machine. “[A] machine is a concrete thing, consisting of parts, or of certain devices and combination of devices. This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result.” *In re Ferguson*, 558 F.3d at 1364 (Fed. Cir. 2009) (quoting *In re Nuijten*, 500 F.3d 1346, 1355 (Fed. Cir. 2007) (internal quotation marks omitted), *reh'g denied en banc*, 515 F.3d 1361 (Fed. Cir. 2008), and *cert. denied*, 129 S. Ct. 70 (2008)). Claim 1 recites a method for rendering a volumetric obscurant in a computer-generated graphical image such that the volumetric obscurant is to create a realistic image. Thus, the claimed method is directed to applying the algorithm to an image and is therefore not tied to a particular machine (e.g., a special-purpose computer).

Similarly, we do not consider the claimed process as transforming an article to a different state or thing. Appellants argue that the independent claims recite transforming a stamp polygon. Brief 27. As claimed, this transformation is to create a volumetric obscurant, which Appellants argue has uses in simulations such as creating the visual effect of an airplane flying through a cloud. Reply Brief 5. These arguments, however, have not persuaded us that the claim is drawn to transforming an article to a different

state or thing. The polygon is discussed on pages 1 and 2 of Appellants' Specification as defining an area in which to simulate realistic-looking obscurant elements (e.g. clouds) in an image. Thus, neither the polygon nor the obscurant represents a physical item; rather, the polygon is an abstraction to define a region of an image. The obscurant is also an abstraction as it is not based upon a physical item, but rather is part of a simulation, i.e. it is not based on the actual existence of a cloud in a captured image. Thus, (1) the steps of spreading sub-pixels recited in claims 1 and 20, and (2) the step of modulating the density of the sub-pixels recited in claim 1 do not transform any physical object. The image is not a physical object and the data, which is part of a simulation, does not represent a physical object. Accordingly, we conclude that claims 1 and 20 do not transform such an object or data representing such an object.

We note that the transformation of data into a visual depiction may be sufficient to establish that the claimed invention recites patent eligible subject matter under 35 U.S.C. § 101 “[s]o long as the claimed process is limited to a practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances.” *Bilski*, 545 F.3d at 963. As discussed *supra*, the underlying data recited in independent claims 1 and 20, and disclosed in Appellants' Specification, do not represent physical objects but rather an abstraction (a simulation).

Accordingly, we sustain the Examiner's rejection of claims 1 through 22 under 35 U.S.C. § 101 as independent claims 1 and 20 are not tied to a particular machine, or nor do they transform an article to a particular state or thing.

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Rejections of claims 1 through 22 under 35 U.S.C. § 103(a)

As to the prior art rejections of claims 1 through 22, our decision is dispositive with respect to patentability since claims 1 through 22 on appeal do not recite patent-eligible subject matter under § 101. We therefore need not reach the question of whether claims 1 through 22 would have been obvious under § 103. *See Diamond v. Diehr*, 450 U.S. 175, 188; *In re Comiskey*, 554 F.3d 967, 973 (Fed. Cir. 2008) (declining to reach obviousness rejection on appeal after concluding many claims were non-statutory under § 101); *Bilski*, 545 F.3d at 951 n.1 (noting that § 101 is a threshold requirement and that the Examiner may reject claims solely on that basis); *In re Rice*, 132 F.2d 140, 141 (CCPA 1942) (finding it unnecessary to reach rejection based on prior art after concluding claims were directed to nonstatutory subject matter). *See also In re Steele*, 305 F.2d 859, 862 (CCPA 1962) (supporting not presenting an art rejection when considerable speculation into the scope of the claim is required).

ORDER

The decision of the Examiner to reject claims 1 through 22 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

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AFFIRMED

ELD

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